

REMARKS

Favorable reconsideration is respectfully requested in light of the following remarks, wherein Claims 17 and 20 have been amended, and Claim 21 has been canceled from the application. Currently, Claims 11-20 are pending in the present application.

As mentioned above, Claim 17 has been amended to remove only a minor typographical error.

Claims 11 and 20 stand rejected under 35 U.S.C. §102(b) as being anticipated by either U.S. Patent No. 5,927,623 to *Ferguson et al.* or U.S. Patent No. 4,856,716 to *Burstedt*. Claims 11-21 stand rejected under 35 U.S.C. §103(a) as being obvious over *Ferguson et al.* in view of *Burstedt*.

Independent Claims 11, 19 and 20 define an apparatus and method for determining a start-up crushing gap width for a crushing operation in a gyratory crusher. The crusher comprises a crushing head fastened on a shaft and is provided with first and second crushing shells arranged to form a crushing gap to receive material to be crushed. The width of the crushing gap is adjustable. A driving device is arranged to cause the crushing head to execute a gyratory pendulum movement. The driving device is activated to cause the crushing head to initiate a gyratory pendulum movement, with the crushing gap set at a first start-up width. Material is fed into the crushing gap to initiate crushing. A load on the crusher resulting from the crushing is measured. The width of the crushing gap is adjusted to cause the load to approach a selected value. A measure representative of the adjusted gap width is obtained. A subsequent start-up width is calculated in accordance with the obtained measure of the adjusted gap width. The width of the crushing gap is set to correspond to the calculated subsequent start-up width prior to repeating the steps for a subsequent crushing operation.

As noted in the Background of the Invention, in the prior art gyratory crushers, upon starting-up crushing in a gyratory crusher, the motor that drives the shaft having the crushing head mounted thereon is first started and then supply of material is commenced in a gap between an inner and an outer shell. Gyratory crushers occasionally get stuck, i.e., the inner shell is jammed against the outer shell when the material initially reaches the gap between the inner and the outer shell. For this reason, a safety factor is utilized which means that the gap width between the inner and the outer shell is set to a larger value in the start than what is expected to be suitable for continuous operation at the material supply in question. When the crushing has become stable, the gap is decreased to the desired value. The above-described method for starting a crusher may to a certain degree decrease the risk of mechanical damage on the crusher during the starting-up, but entails that it takes a long time to reach optimal crushing conditions in the crusher. The above-noted problems are solved by the method and apparatus of the claimed invention.

An advantage of the control system according to the invention is that the crushing can start very fast without exaggeratedly high loads initially. In addition, a high rate of production is obtained at the start of operation. The initial stage of the crushing, during which a bed of material is built up in the gap, becomes short. Another advantage is that the first gap width is changed depending on how the supplied material behaves in the crusher. Thus, an adaptation is carried out of the conditions upon starting-up to variations in the properties of the supplied material over time. None of the art of record disclose these patentable features.

In contrast, *Ferguson et al.* discloses a gyratory crusher with an automatic control system. As summarized in the Abstract, the gyratory crusher includes a control system, an upper frame portion having a bowl liner, and a crushing head having a mantel such that a

crushing chamber having a gap is formed between the bowl liner and the mantel. The control system includes detecting means for detecting a pre-defined bowl float condition of the crusher, adjusting means for automatically adjusting a width of the gap to thereby eliminate the bowl float condition, and monitoring means for determining magnitude and direction of changes in the width of the gap by monitoring rotation of the bowl liner relative to the upper frame portion. The control means is adapted to automatically adjust the width of the gap to operatively compensate for a wearing rate of the bowl liner and the mantel and to terminate operation of the crusher should rate of bowl float conditions exceed a pre-determined quantity.

However, nowhere in *Ferguson et al.* is described the patentable features of the claimed invention. The Examiner concedes that *Ferguson et al.* only discloses control of the gap setting in a gyratory crusher via a load sensor, yet then argues that “[i]t is inherent or common sense that following the reduction of a set amount of material, and having the gap set based on the load as noted above, the following material would be crushed using the final gap of the previous load.” However, in order to establish inherency, certain criteria must be met. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981).

"To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be

established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted) (The claims were drawn to a disposable diaper having three fastening elements. The reference disclosed two fastening elements that could perform the same function as the three fastening elements in the claims. The court construed the claims to require three separate elements and held that the reference did not disclose a separate third fastening element, either expressly or inherently.).

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

Here, the Examiner has failed to establish that the particular steps of the method claims are performed in the device of *Ferguson et al.* In particular, *Ferguson et al.* fails to disclose starting a countdown of a predetermined time period which is used to gage whether an adjustment has been completed. That is, the control system maintains a check of the width adjustment at predetermined time increments, so that the system is constantly in check as to whether an adjustment has become necessary. Likewise, the Examiner has failed to establish that the features of the apparatus claims are found in *Ferguson et al.* In contrast, it appears the control system of *Ferguson et al.* operates in a completely different manner. That is, no where in *Ferguson et al.* is there described the feature of a clock for counting down a predetermined time period beginning with the supply of material to the gap, wherein said calculating means is operable to calculate the subsequent start-up width only if the width adjustment is made within the predetermined time period, as now defined in independent

Claim 20. Accordingly, *Ferguson et al.* fails to disclose the patentable features of independent Claims 11, 19 and 20.

Likewise, *Burstedt* fails to disclose the patentable features of independent Claims 11, 19 and 20. In particular, *Burstedt* relates to a method for controlling a crushing gap width of a gyratory crusher of the kind including a crusher head. The crusher head of the crusher is driven by a power unit and is positionally adjustable in relation to a crusher shell by a hydraulic motor. The hydraulic motor moves the crusher head of the crusher, thereby adjusting the crushing gap width. A power consumption of the crusher, pressure load on the crusher head, and the width of the crushing gap are determined continuously. The crushing gap width is controlled by being adjusted when the gap width is, above a pre-determined minimum gap width value, substantially in accordance with a control function which depends on both the power consumption and the pressure load, and which is so selected as to provide an intended crushing effect the material being crushed.

However, like *Ferguson et al.*, the Examiner has failed to establish that the particular steps of the method claims are performed in the device of *Burstedt*. In particular, *Burstedt* fails to disclose starting a countdown of a predetermined time period which is used to gage whether an adjustment has been completed. Likewise, the Examiner has failed to establish that the features of the apparatus claims are found in *Burstedt*. That is, nowhere in *Burstedt* is there described the feature of a clock for counting down a predetermined time period beginning with the supply of material to the gap, wherein said calculating means is operable to calculate the subsequent start-up width only if the width adjustment is made within the predetermined time period, as now defined in independent Claim 20. In contrast, it appears the control system of *Burstedt* operates in a completely different manner. Accordingly, *Burstedt* fails to disclose the patentable features of independent Claims 11, 19 and 20.

For at least the foregoing reasons, it is submitted that the apparatus and method of independent Claims 11, 19, and 20, and the claims depending therefrom, are patentably distinguishable over the applied documents. Accordingly, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should any questions arise in connection with this application, or should the Examiner believe a telephone conference would be helpful in resolving any remaining issues pertaining to this application, it is respectfully requested that the undersigned be contacted at the number indicated below.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0573. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully Submitted,

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